

planetary models on Copernicus. Thus, he talks (pp. 50-51) of Copernicus' use of "the composition of harmonic motion from two circular motions" (Tūsī's couple) and he adds that "one can hardly speak in terms of any borrowing by Copernicus". His attitude clearly changed later: in the paper written in conjunction with Richard L. Kremer, "Peuerbach and Marāgha Astronomy? The Ephemerides of Johannes Angelus and their Implications" (1996, pp. 73-127), the authors analyse the *Ephemerides* published by the Vienna physician and mathematician Johannes Angelus in 1510 and 1512, in which the planetary positions show major corrections in respect to the results one can obtain by using the *Alfonsine Tables*. This, according to Angelus, is due to his use of a new set of planetary equations calculated by Peuerbach and completed by him. The paper is a splendid and partially successful attempt by the authors to reconstruct the new equation tables, underneath which there are, obviously, new planetary models which Dobrzycki and Kremer attribute to Peuerbach. The authors argue that the hypothetical new equations which give good results for Saturn and Jupiter, but not so good for Mars and the inferior planets, can be explained by models using either the Tūsī couple or Ibn al-Shāṭir's double epicycle. Their conclusion (p. 97) is that "at least one of the Marāgha sources must have been available to the Latin

West before 1461, the year of Peuerbach's death".

As a conclusion: this volume contains an excellent collection of papers that will be extremely useful to historians of Early Modern European astronomy, with occasional treatments of Medieval topics and their influence at later stages: this is the case of his studies of the Western European developments of the *Alfonsine Tables* which appear almost everywhere in the book, and especially in the "Tabulae Resolutae" (1987, pp. 129-135), two papers on Calendar Reform (1975, pp. 61-62; 1983, pp. 63-72) and "Alfonsine Meridians" (coauthored by R.L. Kremer, 1998, pp. 147-159).

Julio Samsó

Glen M. Cooper, *Galen, De diebus decretoriis, from Greek into Arabic. A Critical Edition, with Translation and Commentary, of Hunayn ibn Ishāq, Kitāb ayyām al-buḥrān*. Ashgate, Farnham – Burlington 2011. xvi + 615 pp.

The book under review, which offers a critical edition with a facing page English translation of Hunayn b. Ishāq's Arabic version of Galen's *Περὶ κρίσεων ἡμερῶν*, represents a most welcome addition to the almost centenary corpus of the *Galenus Arabus*. The author comes thus to inscribe his name on a list in which figure such distinguished scholars as R. Walzer, M. Lyons, P.

Kraus, P. Bachmann, F. Klein-Franke and I. Garofalo – for a comprehensive bibliographical survey, cf. G. Strohmeier (1996) “Der syrische und der arabische Galen”, in *Aufstieg und Niedergang der Römischen Welt*, Teil II, Band 37, 2. Teilband, Berlin – New York, de Gruyter: 1987-2017). This publication (an expanded version of the author’s dissertation at Columbia University), along with the expected companion volume containing the critical edition of the Greek text together with a commentary, shall no doubt become a required item of primary literature that any historian of Arabic Islamic medicine needs to have at hand.

Rather than merely putting forward a raw edition-with-translation, the author provides “an introductory discussion on the history of the transmission of the doctrine of the critical days from Greek into Arabic”. This is intended to be “a first foray” into the topic’s intricate conceptual world (pp. XIX-XX).

The volume is structured in four parts: (1) a study of the historical background (pp. 3-90), (2) the annotated edition of the Arabic text and its translation (pp. 91-385), (3) a commentary (pp. 387-500), and (4) two appendices, the first of which (pp. 503-528) presents a provisional Graeco-Arabic apparatus with relevant textual clues, and the second one (pp. 529-551) the edited and translated texts of al-Kindī’s *Risālah* and Qusṭā b. Lūqā’s *Masā’il*. The whole work is complemented with a

bibliography (pp. 553-585) and three indexes (pp. 587-615).

As the author states in Chapter 1, Galen’s *Critical Days* is a work to which scarcely any attention has been paid by modern scholarship, in spite of its having laid the foundations of medical astrology. Against this neglect (probably derived, as suggested here, from the presumed tangentiality of Galen’s astrological framework to his more overtly scientific doctrines), the author proposes a reappraisal of the text from two standpoints. First, it should be reassessed as a paradigm of Galen’s derivation of a predictive model from medical case histories (which, in the author’s opinion, may find a parallel in Ptolemy’s mathematical models for the planetary motions). Second, it should be approached as a pivotal text of his prognostic theory, composed within the frame of his refutation of Scepticism and Methodism and his defence of empirical knowledge. Galen’s purpose would thus have been to validate the doctrine of critical days (in use since Hippocratic times) as a trustworthy prognostic tool pertaining to scientific astrology (a discipline consecrated by Aristotle and Ptolemy) as opposed to divinatory astrology (pp. 6-7). With this aim, he sought an explanation of the pattern behind the critical days (those days of the illness in which the occurrence of crises is much more frequent than on other days) by sifting through the data of Hippocrates’ *Epidemics*. Then, he produced a list of critical days which he ultimately

interpreted in accordance with the Hippocratic medical week, whose length Galen calculated as 6 35/48 days (cf. p. 373).

Seven centuries later Galen's *Critical Days* was rendered into Arabic by Ḥunayn b. Ishāq (ca. 809-873) for the well-known Baghdadi patron Abū Ja'far Muḥammad b. Mūsā b. Shākir in the context of the Abbasid Translation Movement. After a cursory survey of Ḥunayn's figure and œuvre within the historical scenario set by the combined works of D. Gutas and G. Saliba, the author attempts to reconstruct the transmission of the doctrine of critical days in ninth-century Baghdad. Evidence is gathered on the discussion thereof by such leading figures as al-Kindī, Qusṭā b. Lūqā and Ḥunayn b. Ishāq himself (pp. 23-42). The mainly mathematical approach (aprioristic and rationalist in nature) of al-Kindī is examined through the text of his *Risālah* (ca. 830-850), of which the author presents a "working translation" (pp. 529-540) and concludes that it most probably is "pre-Galenic" in the sense that its author seems to be unacquainted with the existence of Ḥunayn's translation and the basically empirical doctrine contained therein. As for Qusṭā b. Lūqā's *Masā'il* (transcribed and translated into English for the first time on pp. 541-551), a terminology clearly different from Ḥunayn's seems to indicate that it is derived directly from the original Greek text (pp. 37-42). As estimable and enlightening as this reconstruction is, one cannot

but regret that the analysis was not broadened to encompass evidence from other contemporary physicians, of which not even passing mention is made. It may be relevant, for instance, that the critical days are utterly absent from the *Risālah Hārūniyyah* (ed. S. Gigandet, Damascus 2001) ascribed, perhaps pseudoepigraphically, to Masīḥ b. Ḥakam al-Dimashqī (*floruit* 840), who was otherwise well acquainted with Hippocratic and Galenic doctrines and with Greek and Indian iatromathematics. When dealing with this early stage, one should also take into account 'Alī b. Sahl Rabban al-Ṭabarī's (died 855 or 864) testimony – cf. especially *Firdaws al-ḥikmah* IV 10, 19 (ed. Ṣiddīqī pp. 303<sub>12</sub>-304<sub>7</sub> | al-Jundī pp. 215<sub>16</sub>-216<sub>2</sub>) and IV 10, 23 (Ṣiddīqī pp. 310<sub>9</sub>-312<sub>21</sub> | al-Jundī pp. 220<sub>4</sub>-221<sub>23</sub>).

Chapter 2 opens (pp. 43-49) with a microhistorically shaped reconstruction of the Graeco-Arabic Translation Movement and a critique of the "Older Scenario" or traditional paradigm, characterized – in the author's opinion – by a rather simplistic conception of the movement and a profound misunderstanding of the role played therein by the *bayt al-ḥikmah*. A new picture is then proposed that leads to the consideration that "the translation culture of ninth-century Baghdad was a far more complex environment than has been assumed. It was a highly organized – but not centralized – research-driven pursuit of knowledge, and the Greek corpus

was searched for any material that could assist practicing scientists" (p. 49).

There follows a subsection on the later history of the *Critical days* (pp. 49-60) that summarizes (somewhat unequally) the fortune of the text in the Arabic, Byzantine, Hebrew and Latin traditions. In the brief paragraphs devoted to its development in the Arabic Islamic medical tradition, the author provides some hints for further study, namely al-Nasawī, Ibn Sīnā and al-Rāzī. On al-Nasawī (not indeed a first- or even second-rank physician, not to say an utter unknown in the history of Arabic Islamic medicine), little more is reported than the fact that he wrote a treatise on critical days that the author "suspect[s] is arithmological in nature". On Ibn Sīnā, attention is called to his *Qānūn* IV, 2 as deserving a separate study. Lastly (with a rather surprisingly antichronological order), al-Rāzī's *al-Hāwī* is altogether dismissed as a textual witness to Galen's *Critical Days*, since quotes therefrom are more closely related to free paraphrasing than literal quotations. Again, no further reference is made to any other physician, and even the names of such outstanding authors of medical encyclopaedias as al-Majūsī or al-Zahrāwī are absolutely ignored.

Still within the chapter on the Historical Background, all the information related to the collated manuscripts is gathered, followed by an assessment of Ḥunayn's translation, some valuable remarks on the textual tradition leading to

the establishment of a stemma (p. 88), and, finally, the editorial criteria.

The core of the volume is, of course, the critical edition of Ḥunayn's Arabic version and its English translation (in fact, the first-ever rendering of the text into a modern language). The author's painstaking, careful effort can clearly be seen in the numerous footnotes (over one thousand in total, most of them pertinent and useful, with hundreds of Greek originals for Arabic words and expressions in the text) and in the page-and-line references to Kühn's Greek text that are included in the edition and the translation. It is also revealed in the excellent one-hundred-page commentary contained in Part III, which analyses all the intricacies of Galen's doctrine and the details of the relation of Ḥunayn's text to its Greek original.

Notwithstanding the author's praiseworthy diligence, a number of errors have found their way into the final draft. We venture to submit here some corrigenda for an eventual second edition, ranging from minor inaccuracies that have escaped notice through the process of proofreading and editing (as is normal in such a complicated work as this) to more substantial mistakes that may convey the impression of a certain unfamiliarity with Arabic texts. The following examples are related to editing and grammar:

p. 97<sub>10</sub> في البدء , most likely MSS في البدء , and according to modern practice البدء في .

p. 128 “*illā* followed by *wa-* is nonsense”, against both MSS and the very grammar of Arabic.

p. 173<sub>12-13</sub> وهي التي يقال لها , which should read يقال لها .

p. 173<sub>13</sub> أي for أي .

p. 299<sub>8</sub> فلنسم , an example of overediting, against both EL فنسمى , only to conform to Greek καλείσθω.

p. 380, footnote 1164: one might think that it was not worth the trouble to justify such a simple and common emendation as MS وضعته\* . وضعته >

Several faulty transliterations from Arabic also betray some grammatical awkwardness:

p. 128, f. 130 *mu'in* for *mu'yin* (معي).

p. 148, f. 206 *wa-liyakun* for *walyakun* (وليكن).

p. 444 *yantafī'a* (= ينتفع §841.1, p. 228): rather (*kulla mā*) *yuntafā'u* (*bihi*), not so much “to be beneficial” as indeed χρήσιμον.

p. 460 *hīlat* (vs. *hīla* some lines further), p. 447 *ināyat*.

p. 486 *'an naḥḥabaru* (! أن نخبر §913.3, p. 341), where the introduction of a shaddah was not compulsory (cf. *'an nuḥbira*) and which at any rate should read *'an nuḥabbira*.

p. 98, f. 13, on the Arabic transliteration of ἐπιδημία, rather than considering it a “confusion”, one may think of the divergent renderings of non-Arabic *p* as both *b* and *f* (e.g. بولس / فولس for Paulus). This duality is also present in Judaeo-Arabic texts, in which no confusion of dots or obscuring of loops could be invoked – this very same word is written אפידימא in Ibn Wāfid's *Book*

*on Simple Medicines* (ed. Aguirre de Cárcer pp. 65<sub>3</sub>, 110<sub>13</sub>). Therefore, it might not be so clear whether Ḥunayn's افقراطيس (actually not “the Arabic text”, but L's reading against E's ابقراطيس) agrees with Kühn's Ἰφικράτους or with Littré's Ἐπικράτεος (cf. p. 250, f. 722).

Moreover, some of the deviations from and misunderstandings of the *Vorlage* with which Ḥunayn is charged may well be a mere product of the editor's mind, as for example:

p. 174, f. 308: on قولاً مرسلًا , which actually matches Greek ἀπλῶς “simply”.

p. 188, f. 385: ignoring that عارض may also convey pretty much of the sense of unforeseeability of ἀδόκητον (cf. Arabic بالعرض) and is not only “something that merely happens”.

p. 212, f. 534 الذين ينظرون في الذبائح rather than an explanation showing “Ḥunayn's knowledge of Graeco-Roman divination”, it is a faithful rendering of the original τοῖς ἱεροσκόποις, who were not “the holy lookers”, but “victim inspectors” (from ἱερά “offerings, victims”, cf. Liddell and Scott's *Greek-English Lexicon* 1996: 822b s.v.v. ἱερός and ἱεροσκόπος).

p. 280, f. 833: Arabic أقلّ منهم makes full sense as an equivalent to φαυλοτέρων, so there was no need to emend the reading of both L and E.

p. 376, f. 1148: it should be *al-kalām al-bārid*, not just *al-bārid*, and the Greek should read ψυχρολογία, not \*ψυχρολογίας (cf. Kühn IX 935<sub>4</sub> ψυχρολογίαις).

Leaving aside these details, we must unreservedly commend the author for having successfully undertaken the hard task of editing, translating and commenting on such a complex text. He has presented us with a valuable contribution to Galenic studies and an indispensable tool for scholars interested in the history of Greek and Arabic Islamic medicine, as well as in the history of the transmission of science in the Mediterranean societies from Late Antiquity to the Renaissance. We look forward to the announced publication by the same author of an edition of Galen's *De Crisibus* and its Arabic translation.

Theo Loinaz

Fabian Käs, *Die Mineralien in der arabischen Pharmakologie. Eine Konkordanz zur mineralischen Materia medica der klassischen arabischen Heilmittelkunde nebst überlieferungsgeschichtlichen Studien*, Akademie der Wissenschaften und der Literatur · Mainz, Veröffentlichungen der Orientalischen Kommission Band 54, 2 vols, Wiesbaden, Harrassowitz Verlag, 2010, XVI + 1167 pp.

The two elegant volumes here reviewed embody the most comprehensive and thoroughly documented research on Arabic pharmacognosy published to date. Not that the subject was virgin soil, since there is a remarkable amount of literature on

this ancillary discipline of medicine (although in the case of mineralogy much of it is rather obsolescent). However never has such a full-scale philological study been attempted to document the knowledge and use of simple mineral drugs in the Arabic Islamic pharmacognostical tradition.

The task certainly was no less than titanic, the main goal being the production of an exhaustive concordance of mineral *materia medica*, in the broad sense conveyed by the Arabic concept of *adwiyah ma'daniyyah*, as opposed to drugs based on plants and animals. The minerals range from stones and gems to metals, salts and earths, from natural pearls and coral to man-made porcelain and glass.

The impressive corpus that has been scrutinized speaks most eloquently of the author's unparalleled endeavour. It comprises the bulk of early, classical and postclassical literature on pharmacognosy written from Iran to al-Andalus: from the ninth-century Abbasid translations of Greek and Syriac texts and the great Iranian medical encyclopaedias (al-Ṭabarī, al-Rāzī) to the beginning of the modern era (e.g. eighteenth-century al-Jazā'irī). An outstanding and most valuable feature of this corpus is the fact that, besides items of primary literature including published and manuscript sources, it incorporates the fragmentary transmission (through direct and indirect quotations by later authors) of a number of no-longer extant texts.